

CLAIMS

What is claimed is:

1. A method of synchronizing to an ultra wideband signal and receiving a partially serialized, sequence keyed, ultra wideband symbol, comprising: a) operating (402) a first plurality of oscillators, each one of the first plurality of oscillators selectively coupled to a respective one of a plurality of parallel receiver paths; b) maintaining (404) a second plurality of oscillators in a non-operational low-power state; b) operating (406) the plurality of parallel receiver paths; c) determining (408), based at least in part upon an output of each of the plurality of parallel receiver paths, whether a synchronization sequence has been received; d) receiving (410) a first portion of a partially serialized, sequence keyed, ultra wideband symbol; e) operating (412), if the determination of (c) is affirmative, a second plurality of oscillators; f) selectively coupling (414) each one of the second plurality of oscillators to a respective one of the plurality of parallel receiver paths; and g) receiving (416) a second portion of the partially serialized, sequence keyed, ultra wideband symbol.

2. The method of Claim 1, wherein each of the plurality of receiver paths receives an in-phase and quadrature version of the outputs of the oscillators coupled thereto.

3. The method of Claim 2, wherein the non-operational low-power state comprises a de-energized state.

4. The method of Claim 2, wherein the non-operational low-power state comprises an energized, non-switching state.

5. The method of Claim 2, further comprising decoupling the first plurality of oscillators from the plurality of parallel receiver paths subsequent to receiving the first portion of a partially serialized, sequence keyed, ultra wideband symbol.

6. A method of receiving a partially serialized, sequence keyed, ultra wideband symbol, comprising: a) operating a plurality of local oscillators, each local oscillator operable to selectively produce at least two frequency outputs, and further configured to produce an in-phase and a quadrature version of each of the at least two frequency outputs; b) operating the plurality of parallel receiver paths, each one of the plurality of parallel receiver paths coupled to a respective one of the local oscillators and receiving a first in-phase and quadrature pair of signals at a first one of the at least two frequencies; c) receiving (410) a first portion of a partially serialized, sequence keyed, ultra wideband symbol; d) operating the plurality of local oscillators such that each one of the plurality of parallel receiver paths receives, from its corresponding local oscillator, a second in-phase

and quadrature pair of signals at a second one of the at least two frequencies; and g) receiving (416) a second portion of the partially serialized, sequence keyed, ultra wideband symbol.

7. The method of Claim 6, wherein there is time delay between the end of the first portions of the partially serialized, sequence keyed, ultra wideband symbol and the second portion of the partially serialized, sequence keyed, ultra wideband symbol.

8. The method of Claim 7, further comprising synchronizing to an ultra wideband signal prior to receiving the first portion of the partially serialized, sequence keyed, ultra wideband symbol.

9. The method of Claim 8, wherein the local oscillators are operable to selectively produce at least two frequency outputs subsequent to synchronizing to an ultra wideband signal.

10. The method of Claim 9, wherein the local oscillators are operable to selectively produce only one frequency output prior to synchronizing to an ultra wideband signal.

11. A receiver for receiving a partially serialized, sequence keyed, ultra wideband symbol, comprising: a plurality of parallel receiver paths, each receiver path including a first mixer (316) and a second mixer (318); a plurality of complex local oscillators (312, 332, 334, 336), each complex local oscillator having an in-phase output and a quadrature output, each one of the complex local oscillators coupled to a corresponding one of the plurality of receiver paths such that the in-phase output is coupled to the corresponding first mixer (316) and the quadrature output is coupled to the corresponding second mixer (318); a rake combiner (338) coupled to receive an output from each of the plurality of parallel receiver paths; a sequence keying demodulator (340) coupled to the rake combiner; and a sequence keying decoder (342) coupled to the sequence keying demodulator.

12. The receiver of Claim 11, wherein each receiver path further comprises a pair of analog-to-digital converters (328, 330).

13. The receiver of Claim 12, further comprising a memory coupled to store information received from the first portion of the partially serialized, sequence keyed, ultra wideband symbol.

14. The receiver of Claim 13, further comprising control circuitry (315) for determining whether a synchronization sequence has been received and for providing

control signals that determine the frequency output of each of the plurality of complex local oscillators.

15. The receiver of Claim 14, further comprising an antenna (302), a filter (304) coupled to the antenna, an antenna switch (306) coupled to the filter, a variable-gain low-noise amplifier (308) coupled to the antenna switch, and a power divider (310) coupled to the variable-gain low-noise amplifier (308), the power divider (310) further coupled to each of the plurality of parallel receiver paths.

16. A transceiver, comprising: a receiver for receiving a partially serialized, sequence keyed, ultra wideband symbol, comprising: a plurality of parallel receiver paths, each receiver path including a first mixer and a second mixer, a plurality of complex local oscillators (312, 332, 334, 336), each complex local oscillator having an in-phase output and a quadrature output, each one of the complex local oscillators coupled to a corresponding one of the plurality of receiver paths such that the in-phase output is coupled to the corresponding first mixer (316) and the quadrature output is coupled to the corresponding second mixer (318); a rake combiner (338) coupled to receive an output from each of the plurality of parallel receiver paths; a sequence keying demodulator (340) coupled to the rake combiner; a sequence keying decoder (342) coupled to the sequence keying demodulator; a memory coupled to store information received from the first portion of the partially serialized, sequence keyed, ultra wideband symbol; control circuitry (315) for determining whether a synchronization sequence has been received and for providing control signals that determine the frequency output of each of the plurality of complex local oscillators; and an antenna (302), a filter (304) coupled to the antenna, an antenna switch (306) coupled to the filter, a variable-gain low-noise amplifier (308) coupled to the antenna switch, and a power divider (310) coupled to the variable-gain low-noise amplifier, the power divider further coupled to each of the plurality of parallel receiver paths; and a transmitter coupled to the antenna switch (306).